INFORMATION SHEET – ORDER NO. R5-2009-XXXX
NORTH OF RIVER SANITARY DISTRICT NO.1 AND
SILLS PROPERTIES, INC.
WASTEWATER TREATEMENT PLANT AND
WATER RECLAMATION
KERN COUNTY

Background

North of River Sanitary District No. 1 owned and operated a Wastewater Treatment Facility (WWTF) near Oildale. The WWTF was regulated by Waste Discharge Requirements (WDRs) Order No. 92-016 that authorized the discharge of 5.5 million gallons per day (mgd) of undisinfected secondary treated wastewater to four unlined storage ponds and to 780 acres of Reclamation Area. Water Reclamation Requirements (WRRs) Order No. 92-019 regulated the discharge to 1,565 acres of Reclamation Area owned and operated by Sill Properties Inc. In 1999, the District completed the construction of its new WWTF about three and a half miles west of the City of Shafter, near its effluent storage ponds, and abandoned its previous WWTF. The Discharger is currently operating the new WWTF under the WDRs issued to the old WWTF.

The new WWTF consist of headworks with two mechanical bar screens, a lift station, a vortex grit removal system, addition of coagulant (Ferric Chloride) and Polymer, a primary clarifier, a plastic media trickling filter, a secondary clarifier, primary and secondary sludge digesters operating in series, and fourteen unlined sludge drying beds. The effluent is used to irrigate alfalfa, wheat, and corn that are used as fodder, fibber, and seed crops for nonhuman consumption. When irrigation demand is low, effluent is sent to four storage ponds with a total storage capacity of approximately 1,488 acre-feet.

The Discharger submitted a Report of Waste Discharge dated December 2008 where it proposed an interim expansion from 5.5 mgd to 7.5 mgd. The Discharger intends to have an ultimate capacity of 12 mgd in the near future.

For the interim expansion the District purchased 320 acres of Reclamation Area (Assessor's Parcel No. 088-210-05) located in Section 36 of Township T28S, Range R24E, MDB&M. The Discharger proposes to recycle wastewater on approximately 2,380 acres of farmland, of which 1,740 acres are owned by Sill Properties Inc. The other 640 acres are owned by the Sanitary District. Approximately 1,950 acres of land will be farmed, 1,080 acres will be used to grow alfalfa, 490 acres to grow wheat, and 380 acres to grow corn.

Both WDRs Order No. 92-016 and WRRs Order No. 92-019 are being consolidated and updated by this Order. The Order assigns the Sanitary District as the primary entity responsible for the WWTF. Sill Properties Inc. is the primary entity, and the Sanitary District the secondary entity, responsible for the application of recycled wastewater and compliance the water recycling requirements of this Order.

Solids and Biosolids Disposal

Sludge is dried in twelve unlined sludge drying beds. Once the sludge is dry, it is applied as a soil amendment of 80 acres owned by the Discharger. Approximately 570 tons of dry sludge is applied to the 80 acres annually, with loading rates of 7.11 tons per acre per year.

Because the unlined sludge drying beds are a potential source of groundwater degradation, the Discharger is proposing to install mechanical dewatering facilities.

Groundwater Conditions

The groundwater monitoring network consists of two wells (MW-1 and MW-2). Groundwater Monitoring Well # 1 is located on the Southeast corner of the WWTF along Seventh Standard Road. Well # 2 is located on the Northwest corner of the WWTF on the intersection of Magnolia Avenue and Burbank Street. Both wells have a depth of 400 feet bgs and have screened intervals of 20 ft, 80 ft, and 100 ft at three different zones.

Having multiple screened intervals within a monitoring well does not provide an adequate representation of groundwater quality. However, based on the two monitoring wells groundwater appears to be of marginal quality. The flow gradient and quality of first-encountered groundwater near the WWTF cannot be determined with two monitoring wells, a minimum of three wells are needed. The Discharger needs to install an adequate groundwater monitoring network and conduct a groundwater investigation to determine the quality of first-encountered groundwater, and at what depth it occurs.

Compliance History

The most recent Notice of Violation (NOV) was issued to the Sanitary District on 25 August 2008 for violating Standard Provisions C.5 and B.2, the Sanitary District did not have a written sampling program and did not have a spill prevention and control plan, respectively.

In response to the NOV, the Sanitary District submitted a Wastewater Treatment Plant Sampling Manual, and a Wastewater Treatment Plan Spill Prevention Response Plan in October 2008.

In 2006, the average effluent EC was approximately 794 µmhos/cm: this exceeded the Basin Plan limit of source water + 500 µmhos/cm (252 µmhos/cm + 500 µmhos/cm = 752 µmhos/cm). These exceedances resulted in several violations documented in CIWQS. In 2007, source water EC was reported at 544 µmhos/cm, which increased the effluent EC limit to 1,044 µmhos/cm. The average effluent EC for 2007 was approximately 855 µmhos/cm; therefore, there were no exceedances that year. In 2008 source water EC was reported as approximately 381 µmhos/cm, this would correspond to an effluent EC limit of 881 µmhos/cm. The average effluent EC for 2008 had a concentration of 818 µmhos/cm; therefore, in 2008 the effluent EC did not exceed the effluent EC limit established by the Basin Plan.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The Basin Plan indicates the greatest long-term water quality problem facing the entire Tulare Lake Basin is increasing salinity in groundwater, a process accelerated by man's activities and particularly affected by intensive irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until there is a long-term solution to the salt imbalance. The Central Valley Water Board encourages proactive management of waste stream by dischargers to control addition of salt through use, and has established an incremental EC

limitation of 500 µmhos/cm or a 1,000 µmhos/cm, as the measure of the maximum permissible addition of salt constituents through use.

The Basin Plan states that discharges to areas that may recharge good quality groundwaters shall not exceed an EC of 1,000 µmhos/cm, a chlorine content of 175 mg/L, or boron content of 1.0 mg/L.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Water In California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Water can be of high quality for some constituents or beneficial uses and not others. Policy and procedures for complying with directives are set forth in the Basin Plan. Degradation of groundwater by some of the typical waste constituents released with discharge from a municipal wastewater utility after effective source control, treatment, and control is consistent with maximum benefit to the people of the State. The technology, energy, water recycling, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, provided terms of the Basin Plan are met.

Constituents of concern in the discharge that have the potential to degrade groundwater include salts and nutrients. However, the discharge will likely not impair the beneficial uses of groundwater because:

a. For nitrogen, shallow groundwater already contains nitrate concentrations in excess of water quality objectives as a result of previous discharges and agricultural practices in the area. This Order includes a time schedule to meet an effluent nitrogen limit of 10 mg/L and/or demonstrate management practices to preclude any further degradation for nitrates.

b. For Salinity, the Basin Plan contains effluent limits for EC of source water plus 500 µmhos/cm and 1,000 µmhos/cm maximum for discharges to areas that may recharge to good quality groundwater. These limits considered the antidegradation policy when adopted. Effluent from the WWTF is approximately 820 µmhos/cm and meets the Basin Plan limits. Ambient shallow groundwater is of marginal quality with EC concentrations that appears to be greater than 1,000 µmhos/cm; therefore, degradation would not occur. If further groundwater studies indicate natural background quality for salinity is less than 820 µmhos/cm, this Order will be reopened to consider degradation.

Treatment Technology and Control
The expansion project will provide treatment and control of the discharge that incorporates:

a. Secondary treatment of the wastewater;
b. Pretreatment monitoring and compliance assessment;
c. Recycling of wastewater for crop irrigation;
d. Appropriate biosolids handling and treatment for reuse;
e. An operation and maintenance (O&M) manual;
f. Certified operators to insure proper operation and maintenance; and
g. Discharge and groundwater monitoring.

Title 27
Title 27, CCR, section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies sitting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27. Treatment and storage facilities associated with the WWTF, including treatment and storage facilities for sludge, are exempt from Title 27 under section 20090(a),. Whether or not exempt from Title 27, discharges may not cause violations of water quality objectives. Residual sludge (for the purposes of the proposed Order, sludge that will not be subjected to further treatment by the WWTF) is not exempt from Title 27. Solid waste (e.g., grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27 because the discharges to groundwater will be in accordance with the Basin Plan.

CEQA
North of River Sanitary District No. 1 adopted a Negative Declaration (SCH # 1989091801) on 18 October 1989 for the expansion of a regional WWTF to an ultimate capacity of 12 mgd. The CEQA document did not address impact on groundwater from the project. However, this Order includes effluent limits for salinity, BOD, TSS, and nitrogen, and groundwater limitations for nitrate, EC, and other constituents with MCLs, taste and odor producing, and toxicity constituents. Compliance with these limits will mitigate any significant impacts to water quality.

Proposed Order Terms and Conditions

Discharge Prohibitions, Specifications and Provisions

The proposed Order prohibits discharge to surface waters and water drainage courses and cross connection between potable water and well water piping with recycled water piping.

The proposed Order would set a monthly average daily flow limit of 7.5 mgd, with effluent limits for BOD_5 and TSS of 40 mg/L monthly average and 80 mg/L daily maximum. These limitations are based on Basin Plan minimum performance standards for municipal facilities.

The provisions regarding pond dissolved oxygen, pH, and freeboard are consistent with Central Valley Water Board policy for the prevention of nuisance conditions, and are applied to all such facilities.

The proposed Order would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greater.

The proposed Order includes Provisions that would require the Discharger to evaluate the existing groundwater monitoring network and propose the installation of an adequate groundwater monitoring network. The Order would also provide a time schedule for the Discharger to submit an updated Title 22 Engineering Report, a Sludge Management Plan, an Industrial Pretreatment Program, an installation report for the mechanical dewatering facilities, a Nutrient Management Plan, and a detailed land use study report.

Monitoring Requirements

The proposed Order includes influent and effluent monitoring requirements, pond monitoring, groundwater monitoring, source water monitoring, sludge monitoring, and Reclamation Area monitoring. This monitoring is necessary to characterize the discharge, evaluate compliance with effluent limitations prescribed by the Order, and evaluate groundwater quality and the extent of the degradation caused by the discharge.

The Discharger must monitor groundwater for waste constituents expected to be present in the discharge, and capable of reaching groundwater and violating groundwater limitations if its treatment, control, and environmental attenuation, proves inadequate. For each constituent of concern, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentration or to prescribed numerical limitations to determine compliance.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if applicable laws and regulations change.

DMS/DKP: 6/09/2009